

**State of Maine**

**Department of Financial and Administrative Services**

**Maine Revenue Services**

**Software Developer's Guide**

**For Tax Years 2013 and 2014**

**PDF417 Formatted 2-D Bar Coded Tax Returns**

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# Record of Changes

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## **Section 1: Maine Revenue Services includes 2-D Bar Coding of Tax Returns**

After testing the use of PDF-417 barcodes on Maine's Individual Income Tax Return (1040ME) it was decided that this technology would be incorporated with several of Maine's substitute tax forms. In 2012 MRS' Administrative Rule 104 was changed to require the placement of 2D barcodes on all tax software developed substitute forms designated to contain the 2D barcode. Waivers may be requested and will be granted on a case by case basis. Forms received without the 2-D bar code will be delayed in processing and may result in reduced accuracy of the data captured with resulting delays in processing or un-necessary contact with taxpayers. For the 2013-2014 tax processing season the following forms will be mandated to contain the 2-D barcodes:

1040, 1040X, 1120, 1120X, 941P (including the 941P Schedules 2 and 3 forms)

Information on 2-D bar coding of tax forms is available on the Federation of Tax Administrators' web site at [www.taxadmin.org](http://www.taxadmin.org).

## **Section 2: 2-D Barcode Content**

The 2-D barcode will include all variable data fields contained on the primary form as well as all other supporting forms from which data is captured. All alphabetic characters must be capital letters only.

All data formats follow the criteria published in the "Tax Forms Processing 2-D Barcoding Standards Guidance" issued by the Federation of Tax Administrators (FTA). Note: hyphens and separators should not be used in dates, social security numbers, telephone numbers, etc. However, a leading hyphen ("-") is to be used for negative dollar amounts.

The name field on the return should be broken down by field as described in the tax form layout specifications. Check box fields should return the number "1" if checked and "0" if blank.

Dollar amounts, on non-payroll related forms, are required to be rounded to the nearest dollar and the bar code field must contain whole dollars only with no special characters except for the "-" in front of a negative dollar amount. On payroll reporting forms (currently the 941P and its schedules) all payroll values will contain cents except in the Sales and/or Income fields as stipulated in the 2D specifications for these forms.

## **Section 3: PDF417 Formatting Specifications**

Developers are encouraged to also refer to Tax Forms Processing – 2D Barcoding Standards: Section 3 as found at [www.nactp.org](http://www.nactp.org).

Encode type	Normal PDF417
DPI	300 dpi
Pixel shaving	ON
Code word count	Variable
Encryption Error Correction Level	4
Mils	10
Data Columns	Variable
Module Aspect Ration	2.00 : 1
Data Rows	Variable
X Dimension	3
Location	Reserved area on page one of primary form
Reserved space	3.75" x 1.65" (may vary depending on amount of data)

Max Characters	1300
Field Delimiter	Carriage Return [ <CR> ]
End of File Delimiter	“*EOD*”

1. PDF 417 has error detection and correction capabilities. The more error correction is used, the less data can be communicated in the barcode. Complete barcode read failures are very uncommon. The tax Application Programming Interface (tax API) sets parameters for correction/detection. These parameters should be observed and not altered.
2. Based on the experience of other taxing authorities' 2-D barcode use, the error correction level in the current market-provided DLL will be set to level 4.
3. A general rule that can be used to determine if a printer is capable of producing a 2-D barcode is if the printer can produce a graphic such as a tax agency seal or business logo, then the printer should be capable of producing a 2-D barcode that can be scanned.
4. Pixel shaving is a technique that produces higher-quality barcodes when printed on lower-quality equipment like inkjet printers. Pixel shaving will result in improved read rates. In the DLL, pixel shaving will always be turned on.
5. Increasing the x (horizontal) dimension of the barcode elements from the minimum of 7.5 mils to the maximum of 25 mils will produce the most readable barcodes, especially on low quality ink/bubble jet printers. Whenever possible, software vendors will create a barcode that uses the largest possible x element value for the given space.
6. Users are advised that stretching or scaling the barcode (via copying the paper media or the like) changes its integrity and worsens readability; it should not be employed.
7. 2-D barcodes should never be rotated. Rotating a 2-D barcode increases processing difficulty and introduces the risk of errors. Since PDF-417 barcodes are read in both the x (horizontal) and y (vertical) directions on a portrait page, rotating them from their natural position can render the barcode unusable.
8. Unless otherwise noted in Part 2, any line item left unanswered or having a value of zero (blank, no data, null or 0) should not have a value on the printed page or in the 2D barcode. An inspection of the 2D barcode (raw data) should look something like this, which represents 2 consecutive line items having no data values, [ <CR><CR><CR> ].

## **Section 4: Quality Assurance**

The software must ensure that Name, Address and Entity ID (Social Security, Federal Entity Identification Number, Account Number, etc.) information is present prior to printing the return.

Also, the software must contain a brief explanation of what a 2-D barcode is and inform taxpayers that any changes made to a return after printing will not be reflected in the 2-D barcode unless they print a new return. Handwritten changes on computer-generated returns are not acceptable and may not be detected during processing resulting in original data being applied to the account. Failure to print a new return after making changes will severely impact MRS processing and introduce errors.

The software must ensure that printed data and encoded data in the 2-D barcode are an exact match with the exception to rounding of dollar amounts. Any updates to data must be reflected in the 2D barcode prior to a return being printed. This becomes especially important when a return is updated after its initial creation. Changes to any document within a return must flow to every other area of the return, as appropriate.

For their own internal purposes, the vendor may choose to print company name, an identification number, control number, version number, etc. on the form or schedule. Row 64 of the paper form may be used for this purpose. When trying to research a problem, some vendors have found this information to be helpful.

## **Section 5: Portable Document Format – PDF Files**

**IMPORTANT!** When saving a form in PDF format, the ADOBE reader defaults to fit or shrink to printable area. There is a setting in the PDF specifications that can be set in each file that will force the document to print without being shrunk. When using PDF files to save and/or print tax returns, the following PDF Viewer Preferences or properties must be set by the vendor application:

**PrintScaling = None**

**Duplex = Simplex**

The standard Adobe Reader when installed, defaults to Page Scaling set to “shrink to printable area” causing all documents to be scaled. This causes two problems: 1.) 2D barcodes become unreadable and 2.) Fixed location printing is shifted and also becomes unreadable.

Setting the PrintScaling property to none will override the local setting and force the document to print without scaling.

Setting the Duplex property to Simplex will override local settings and force the documents to be printed single sided. Simplex printing is a requirement for 2D bar coded returns.

These settings are explained in section 8.1, Viewer Preferences, page 577 of the following manual:

PDF Reference sixth edition Adobe®  
Portable Document Format Version 1.7  
November 2006  
Adobe Systems Incorporated

This document can be found at:

[http://www.aiim.org/documents/standards/pdf/Pdf\\_reference\\_1-7.pdf](http://www.aiim.org/documents/standards/pdf/Pdf_reference_1-7.pdf)

The following are excerpts from that manual.

**PrintScaling** The page scaling option to be selected when a print dialog is displayed for this document. Valid values are **None**, which indicates that the print dialog should reflect no page scaling, and **AppDefault**, which indicates that applications should use the current print scaling. If this entry has an unrecognized value, applications should use the current print scaling. Default value: AppDefault. Note: If the print dialog is suppressed and its parameters are provided directly by the application, the value of this entry should still be used.

**Duplex** - The paper handling option to use when printing the file from the print dialog.

The following values are valid:

**Simplex** - Print single-sided

**DuplexFlipShortEdge** - Duplex and flip on the short edge of the sheet

**DuplexFlipLongEdge** - Duplex and flip on the long edge of the sheet

## **Section 6: Maine Testing Procedures**

The Maine 2-D test package will be available online at [www.maine.gov/revenue/vendors](http://www.maine.gov/revenue/vendors) as soon as is practical. The same scenarios used for OCR readability testing will be used for 2-D barcode testing whenever possible.

Vendor registration requirements, forms approval guidelines and MRS contact information is published in our “Guidelines for Developing Substitute Tax Forms” published at this same web address. MRS has established a

new email address for vendors to use to contact members of the Forms Management Team and should be used for submission of all test forms and approval requests. This email address is: [VendorForms.MRS@maine.gov](mailto:VendorForms.MRS@maine.gov)

While all tax software vendors have been assigned a four digit identification number by FTA, Maine has been assigning two digit vendor identification numbers for several years and will continue to use these. Therefore all 2-D bar codes will contain both the FTA assigned identification as well as the Maine assigned identification numbers. These locations are identified within the respective specifications.

## **Section 7: Address Formatting Guidelines**

Maine has a number of taxpayers who live outside of Maine and the United States. For this reason it is important that the taxpayer's address be complete with State abbreviations, zip/postal codes, and country codes. MRS is reviewing its address format with respect to foreign addresses and how they will appear on the printed form but, there is no place, currently, on the paper return to enter a country code even though it is a required field and must appear within the 2-D barcode.

For addresses within the United States, its Territories, and U.S. Military addresses use United States Postal Service approved state abbreviations and the country code of "USA". For addresses in Canada the below listed Canadian Province abbreviations are to be used in the State Code field, place the Postal Code in the Zip Code field and "CAN" in the Country Code field.

### **Canadian Provinces:**

Alberta	AB	Newfoundland	NL	Prince Edward Islands	PE
British Columbia	BC	Northwest Territories	NT	Quebec	QC
Labrador	NL	Nova Scotia	NS	Saskatchewan	SK
Manitoba	MB	Ontario	ON	Yukon Territory	YT
New Brunswick	NB	Nunavut	NU		

For addresses outside either the United States or Canada leave the State Code Field blank, place the Postal Code in the Zip Code field and the appropriate Country Code as found in IRS Pub 1346 Attachment 10 in the Country Code Field.